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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,367	09/30/2003	Liang Jiang	132347-1	5979
6/147 7590 08/05/2008 GENERAL ELECTRIC COMPANY GLOBAL RESEARCH PATENT DOCKET RM. BLDG. K1-4A59 NISKAYUNA, NY 12309				
EXAMINER ROE, JESSEE RANDALL				
ART UNIT 1793		PAPER NUMBER		
NOTIFICATION DATE 08/05/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/675,367

**Applicant(s)**

JIANG ET AL.

**Examiner**

Jessee Roe

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4, 6, 8 and 10-23 is/are pending in the application.
- 4a) Of the above claim(s) 11-18, 20 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6, 8, 10, 19, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date 13 June 2008.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 13 June 2008 has been entered.

### ***Status of the Claims***

Claims 1-2, 4, 6, 8 and 10-23 are pending wherein claims 1 and 6 are amended; claims 22-23 are new; claims 3, 5, 7 and 9 are canceled; and claims 11-18 and 20-21 are withdrawn from consideration.

### ***Status of Previous Rejections***

The previous rejection of claims 1-2, 4, 6, 8, 10 and 19 are under 35 U.S.C. 112, first paragraph is withdrawn in view of the Applicant's amendments to the claims. The previous rejection of claims 1-2, 4, 6, 8 and 19 under 35 U.S.C. 103(a) as being unpatentable over Toge et al. (JP 06-065691) is withdrawn in view of the Applicant's arguments and amendments to the claims. The previous rejection of claims 1-2, 4, 6, 8, 10 and 19 under 35 U.S.C. 103(a) as being unpatentable over Twigg et al. (US

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3,723,108) in view of the ASM Specialty Handbook is withdrawn in view of the

Applicant's arguments.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 6, 8, 19 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 11-217644).

In regards to claim 1, Hamada (JP '644) discloses a nickel-containing alloy having a composition relative to that of the instant invention as shown in the table below (abstract and [0017]).

<b>Element</b>	<b>From Instant Claims (weight percent)</b>	<b>Hamada (JP '644) (weight percent)</b>	<b>Overlap (weight percent)</b>
Al	about 1.5 – about 4.5	0.01 – 3.0	about 1.5 – 3.0
Ti	about 1.5 – about 4.5	0 – 2.0	about 1.5 – 2.0
Nb	about 0.8 – about 3	0 – 2.0	about 0.8 – 2.0
Cr	about 14 – about 28	18 – 25	18 – 25
Zr	up to about 0.2	0	0
Co	about 10 – about 23	17 – 23	17 – 23
W	about 1 – about 3	0 – 10	about 1 – about 3
Ni	about 40 – about 70	35 – 64.99	about 40 – 64.99

The Examiner notes that the composition of the nickel-containing alloy disclosed by Hamada (JP '644) overlaps the composition of the instant invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of

ordinary skill in the art at the time the invention was made to have selected the claimed amounts of aluminum, titanium, niobium, chromium, cobalt, and tungsten from the amounts disclosed by Hamada (JP '644) because Hamada (JP '644) discloses the same utility throughout the disclosed ranges.

With respect to the recitation "wherein the atomic ratio of aluminum to titanium is about 0.5 to about 1.5", the Examiner notes that Hamada (JP '644) discloses that titanium and aluminum would be effective in improving the gamma prime phase [0022]. Furthermore, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those of ordinary skill in the art. *In re Austin, et al.*, 149 USPQ 685, 688. It would have been obvious to one of ordinary skill in the art to select the desired amounts of titanium and aluminum from the ranges disclosed by Hamada (JP '644) such that the formula would be satisfied because Hamada (JP '644) teaches the same utility throughout the disclosed range.

With respect to the recitation "with the proviso that the nickel-containing alloy is substantially devoid of tantalum", Hamada (JP '644) discloses less than or equal to 2.0 weight percent tantalum, which would include 0 weight percent (i.e. does not necessitate the addition of tantalum to the nickel-containing alloy) (abstract and [0023]).

In regards to claim 2, Hamada (JP '644) discloses that 0.01 to 5.0 weight

percent titanium and aluminum would be present in the nickel-containing alloy, which overlap the range of about 3 to about 9 weight percent titanium and aluminum as claimed in the instant invention (abstract, [0017] and [0022]).

In regards to claim 4, Hamada (JP '644) discloses that 0.01 to 7.0 weight percent titanium, aluminum and niobium would be present in the nickel-containing alloy, which overlaps the range of about 3 to about 12 weight percent titanium, aluminum, and niobium as claimed in the instant invention (abstract, [0017], [0022], and [0023]).

In regards to claim 6, Hamada (JP '644) discloses less than or equal to 0.5 weight percent hafnium (abstract, [0017] and [0024]).

In regards to claim 8, Hamada (JP '644) discloses less than or equal to 0.5 weight percent carbon (abstract, [0017] and [0025]), which would encompass the range of about 0.02 to about 0.15 weight percent carbon as instantly claimed.

In regards to claim 19, Hamada (JP '644) discloses that the nickel-containing alloy composition would be used as the combustor liner of gas turbines (abstract and [0017]).

In regards to claim 22, Hamada (JP '644) discloses 0 to 2 weight percent niobium (abstract, [0017] and [0023]), which overlaps the range of about 1.25 to about 3 weight percent niobium as instantly claimed.

In regards to claim 23, Hamada (JP '644) discloses 18 to 25 weight percent chromium (abstract, [0017] and [0019]) which reads on the range of about 20 to 25 weight percent chromium as instantly claimed.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 11-217644) as applied to claim 6 above, and further in view of Twigg et al. (US 3,723,108).

In regards to claim 10, Hamada (JP '644) discloses a nickel-containing alloy that would be used for the combustor liner of gas turbines as shown above, but Hamada (JP '644) does not specify adding about 0.001 to about 0.025 weight percent boron to the nickel-containing alloy.

Twigg et al. ('108) discloses, in the same field of endeavor, adding 0.001 to 0.05 weight percent boron to a nickel-containing alloy having a substantially similar composition in order to improve stress rupture strength (abstract, col. 1, line 69 – col. 2, line 16 and col. 4, lines 1-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added 0.001 to 0.05 weight percent boron, as disclosed by Twigg et al. ('108), to the nickel-containing alloy, as disclosed by Hamada (JP '644), in order to improve stress rupture strength, as disclosed by Twigg et al. ('108) (abstract, col. 1, line 69 – col. 2, line 16 and col. 4, lines 1-8).

Claims 1-2, 4, 6, 8, 10, 19 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheaton (US 3,561,955).

In regards to claim 1, Wheaton ('955) discloses a nickel-containing alloy having a composition relative to that of the instant invention as shown in the table below (col. 2, line 63 - col. 3, line 31).

<b>Element</b>	<b>From Instant Claims (weight percent)</b>	<b>Wheaton ('955) (weight percent)</b>	<b>Overlap (weight percent)</b>
Al	about 1.5 – about 4.5	about 2.5 – 4.75	about 2.5 – about 4.5
Ti	about 1.5 – about 4.5	about 1 – 3	about 1.5 – 3
Nb	about 0.8 – about 3	about 0.5 – 2.5	about 0.8 – 2.5
Cr	about 14 – about 28	about 14 – about 18	about 14 – about 18
Zr	up to about 0.2	about 0.01 – 0.20	about 0.01 – 0.20
Co	about 10 – about 23	about 5 – 20	about 10 – 20
W	about 1 – about 3	about 2 – 4.5	about 2 – about 3
Ni	about 40 – about 70	Balance	Balance

The Examiner notes that the composition of the nickel-containing alloy disclosed by Wheaton ('955) overlaps the composition of the instant invention, which is prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the claimed amounts of aluminum, titanium, niobium, chromium, zirconium, cobalt, and tungsten from the amounts disclosed by Wheaton ('955) because Wheaton ('955) discloses the same utility throughout the disclosed ranges.

With respect to the recitation "wherein the atomic ratio of aluminum to titanium is about 0.5 to about 1.5", the Examiner notes that Wheaton ('955) discloses that titanium and aluminum would be effective in precipitation strengthening of the alloy (col. 5, lines 8-20). Furthermore, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those of ordinary skill in the art.



In re Austin, et al., 149 USPQ 685, 688. It would have been obvious to one of ordinary skill in the art to select the desired amounts of titanium and aluminum from the ranges disclosed by Wheaton ('955) such that the formula would be satisfied because Wheaton ('955) teaches the same utility throughout the disclosed range.

With respect to the recitation "with the proviso that the nickel-containing alloy is substantially devoid of tantalum", Wheaton ('955) discloses that a total of 5 weight percent of the nickel-containing alloy may comprise tantalum plus two times the niobium (col. 5, lines 21-29). However, niobium would be preferred to tantalum from the standpoint of density and cost whereas tantalum would be advantageous from the standpoint of oxidation resistance. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to omit tantalum where improved oxidation resistance would not be required or desired. MPEP 2144.04(II).

In regards to claim 2, Wheaton ('955) discloses about 3.5 to about 7.75 weight percent titanium and aluminum would be present in the nickel-containing alloy, which would be within the range of about 3 to about 9 weight percent titanium and aluminum as claimed in the instant invention (col. 5, lines 8-50).

In regards to claim 4, Wheaton ('955) discloses that about 4.0 to 10.25 weight percent titanium, aluminum and niobium would be present in the nickel-containing alloy, which would be within the range of about 3 to about 12 weight percent titanium, aluminum, and niobium as claimed in the instant invention (col. 5, lines 8-50).

In regards to claims 6 and 10, Wheaton ('955) discloses about 0.005 to 0.05 weight percent boron, which overlaps the claimed range of about 0.001 to about 0.025

weight percent boron as instantly claimed (col. 2, line 63 - col. 3, line 31).

In regards to claim 8, Wheaton ('955) discloses about 0.1 to about 0.17 weight percent carbon (col. 5, lines 35-50), which would overlap the range of about 0.02 to about 0.15 as instantly claimed.

In regards to claim 19, Wheaton ('955) discloses that the nickel-containing alloys would be used as components of a turbine (col. 1, lines 39-66).

In regards to claim 22, Wheaton ('955) discloses about 0.5 to 2.5 weight percent niobium (col. 2, line 63 - col. 3, line 31), which overlaps the range of about 1.25 to about 3 weight percent niobium as instantly claimed.

In regards to claim 23, Wheaton ('955) discloses about 14 to about 18 weight percent chromium (col. 3, lines 20-30) whereas the instant claims recite "chromium is present in an amount of about 20 to 25 weight percent". The Examiner notes that the instant specification does not define "about" to exclude values such as about 18 weight percent as disclosed by Wheaton ('955) and therefore about 18 weight percent chromium reads on the claim.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-2, 4, 6, 8, 10 and 19 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John P. Sheehan/  
Primary Examiner, Art Unit 1793

JR